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# Mother-to-Child (Perinatal) HIV Transmission and Prevention

HIV transmission from mother to child during pregnancy, labor, delivery, or breastfeeding is called perinatal transmission. Research published in 1994 showed that zidovudine (ZDV) given to pregnant HIV-infected women reduced this type of HIV transmission [1]. Since then, the testing of pregnant women and treatment for those who are infected have resulted in a dramatic decline in the number of children perinatally infected with HIV.

Perinatal HIV transmission is the most common route of HIV infection in children and is now the source of almost all AIDS cases in children in the United States [2]. Most of the children with AIDS are members of minority races/ethnicities.

## STATISTICS

### HIV/AIDS in 2004

The following are based on data from the 35 areas with long-term, confidential name-based HIV reporting.\*

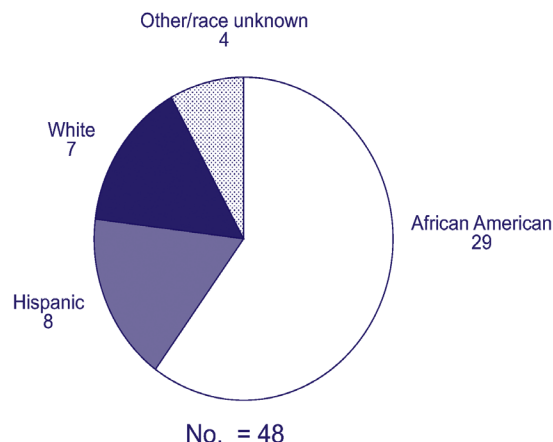
- HIV/AIDS was diagnosed for an estimated 145 children who had been infected with HIV perinatally [2].
- Approximately 6,100 persons who had been infected with HIV perinatally were living with HIV/AIDS at the end of 2004 [2].
- Of the perinatally infected persons living with HIV/AIDS, 66% were African American [2].

\*See box before the References section for a list of the 35 areas.

### AIDS in 2004

- Of the 48 children for whom AIDS was diagnosed during 2004, 47 had been infected with HIV perinatally [2].
- An estimated 57 persons with AIDS who died had been infected with HIV perinatally [2].
- Since the beginning of the epidemic, AIDS had been diagnosed for an estimated 8,779 children who had been infected perinatally. Of those, an estimated 4,982 had died.
- Over the course of the epidemic, the number of perinatally transmitted AIDS cases has decreased dramatically. The number of infants infected with HIV through mother-to-child transmission decreased from an estimated peak of 1,750 HIV-infected infants born each year during the early to mid-1990s to 280–370 infants in 2000 (CDC, unpublished data, 2000). This decrease is largely due to the use of antiretroviral therapy during pregnancy and labor [3].

### Race/ethnicity of children (<13 years) with AIDS diagnosed during 2004



*Note.* Includes children of unknown race or multiple races. Because the total is less than 100, this graph shows numbers, not percentages, of children.

## RISK FACTORS AND BARRIERS TO PREVENTION

### Lack of Awareness of HIV Serostatus

The main risk factor, which is also a barrier to the prevention of mother-to-child HIV transmission, is lack of awareness of HIV serostatus.

- Of the estimated 120,000 to 160,000 HIV-infected women in the United States, 80% are of childbearing age [3]. Because approximately 25% of all people infected with HIV do not know their HIV status [4], many of these women may not know they are infected.
- Without antiretroviral therapy, approximately 25% of pregnant HIV-infected women will transmit the virus to their child [1].

### Sexual Contact with HIV-infected Men

The risk factors for women have changed. Earlier in the epidemic, more women were exposed to HIV through injection drug use [3]. During the 1990s, women's exposure through sexual contact with HIV-infected men played a larger role in HIV infection than did injection drug use [2]. This is why women should know their own, and their partners', HIV serostatus and risk factors.

### Uneven HIV Testing Rates

Recent CDC studies found that HIV testing rates for pregnant women varied widely and that a relatively high proportion of women of childbearing age were unaware that treatment is available to reduce the risk of perinatal transmission [5, 6]. However, in a 2002 study of HIV testing in the United States, 69% of the 748 women who had recently been pregnant reported that they had been tested during prenatal care [7].

- Because of prenatal testing, most HIV-infected women know they are infected before they give birth [8]. Still, testing rates in the United States remain uneven: 18% of the women

in another study were not tested until after childbirth [9].

- State HIV testing rates differ, depending on the testing approach used. For example, rates for states using the opt-in approach (women are provided pretest counseling and must specifically consent to an HIV test) ranged from 25% to 69%. The opt-out approach (women are told that an HIV test will be included in the standard group of prenatal tests but that they may decline testing) results in higher testing rates [5]. CDC recommends the opt-out approach [10], but in many prenatal settings, it has not been implemented. CDC is working with state public health departments and national organizations to increase the rates of HIV testing among pregnant women.

## PREVENTION

The annual number of new HIV infections in the United States has declined from a peak of more than 150,000 during the mid-1980s and has stabilized at approximately 40,000 since the late 1990s. Persons of minority races/ethnicities are disproportionately affected by the HIV epidemic. To reduce further the incidence of HIV, CDC announced a new initiative, Advancing HIV Prevention (AHP) ([http://www.cdc.gov/hiv/topics/prev\\_prog/AHP](http://www.cdc.gov/hiv/topics/prev_prog/AHP)), in 2003. This initiative comprises 4 strategies: making HIV testing a routine part of medical care, implementing new models for diagnosing HIV infections outside medical settings, preventing new infections by working with HIV-infected persons and their partners, and further decreasing perinatal HIV transmission.

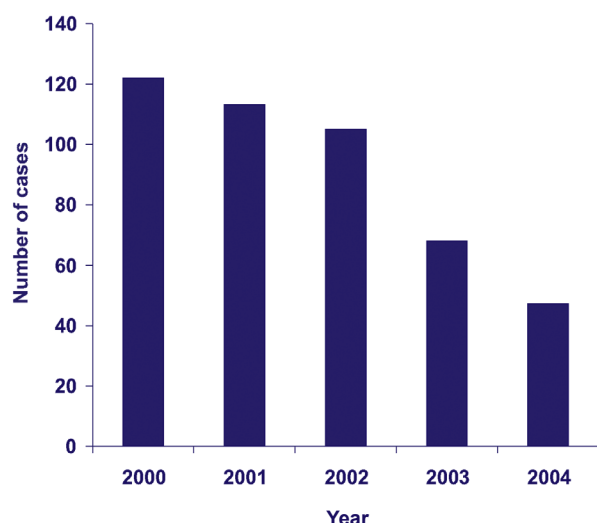
With regard to perinatal HIV transmission, AHP recommends the routine voluntary testing of all pregnant women to further reduce the number of children who are infected. In addition, voluntary rapid HIV testing, which has been shown to be feasible and accurate [11], should be offered to women in labor whose HIV serostatus is unknown.

AHP builds on the widespread success of the US Public Health Service recommendations for the HIV counseling and testing of pregnant women [3, 12] and for the use of antiretroviral therapy during pregnancy [13].

Already, perinatal HIV prevention has saved lives and resources.

- The number of children with a diagnosis of AIDS who had been perinatally exposed to HIV declined from 122 in 2000 to 47 in 2004 [2].
- Antiretroviral therapy administered during pregnancy, labor, and delivery and then to the newborn, as well as elective cesarean section for women with high viral loads (more than 1,000 copies/ml), can reduce the rate of perinatal HIV transmission to 2% or less [3]. If medications are started during labor, decreased rate of perinatal transmission can still be achieved (less than 10%).
- The estimated annual cost of perinatal HIV prevention in the United States is \$67.6 million. This investment prevents 656 HIV infections and saves \$105.6 million in medical care costs alone—a net savings of \$38.1 million annually [14].

## Perinatally transmitted AIDS cases, by year of diagnosis, 2000–2004, United States



CDC funds 15 state and local health departments to conduct perinatal HIV prevention programs. The following are examples of CDC-funded perinatal HIV prevention programs:

- Social marketing campaigns in Maryland and New York to encourage women to be tested
- Tracking and surveillance programs in Louisiana and Los Angeles to identify HIV-infected pregnant women who are not receiving medical care and connect these women to health care resources
- Outreach programs in Florida for women in nontraditional settings, including jails
- Programs in Connecticut and other places that train health care providers to increase the number of women who are tested for HIV during prenatal care
- Regional strategic planning workshops with hospitals to implement rapid HIV testing for women in labor whose HIV serostatus is unknown

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## Understanding HIV and AIDS Data

**AIDS surveillance:** Through a uniform system, CDC receives reports of AIDS cases from all US states and territories. Since the beginning of the epidemic, these data have been used to monitor trends because they are representative of all areas. The data are statistically adjusted for reporting delays and for the redistribution of cases initially reported without risk factors. As treatment has become more available, trends in new AIDS diagnoses no longer accurately represent trends in new HIV infections; these data now represent persons who are tested late in the course of HIV infection, who have limited access to care, or in whom treatment has failed.

**HIV surveillance:** Monitoring trends in the HIV epidemic today requires collecting information on HIV cases that have not progressed to AIDS. Areas with confidential name-based HIV infection reporting requirements use the same uniform system for data collection on HIV cases as for AIDS cases. A total of 35 areas—the US Virgin Islands, Guam, and 33 states (Alabama, Alaska, Arizona, Arkansas, Colorado, Florida, Idaho, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming)—have collected these data for at least 5 years, providing sufficient data to monitor HIV trends and to estimate risk behaviors for HIV infection. Recently, 9 additional areas have begun confidential name-based HIV surveillance, and data from these areas will be included in coming years.

**HIV/AIDS:** This term includes persons with a diagnosis of HIV infection (not AIDS), a diagnosis of HIV infection and a later diagnosis of AIDS, or concurrent diagnoses of HIV infection and AIDS.

## For more information . . .

**CDC HIV/AIDS**  
<http://www.cdc.gov/hiv>  
*CDC HIV/AIDS resources*

**CDC-INFO**  
1-800-232-4636  
*Information about personal risk and where to get an HIV test*

**CDC National HIV Testing Resources**  
<http://www.hivtest.org>  
*Location of HIV testing sites*

**CDC National Prevention Information Network (NPIN)**  
1-800-458-5231  
<http://www.cdcnpin.org>  
*CDC resources, technical assistance, and publications*

**AIDSinfo**  
1-800-448-0440  
<http://www.aidsinfo.nih.gov>  
*Resources on HIV/AIDS treatment and clinical trials*